

WHAT IS CLAIMED IS:

1. A unit for stabilizing a wavelength of a light, comprising:

(a) a first light-receiver directly receiving a part of laser beams irradiated
5 from a semiconductor laser;

(b) a wavelength-filter directly receiving a part of said laser beams, and
having a transmittance varying in accordance with a wavelength of the received
laser beams; and

(c) a second light-receiver receiving laser beams having passed through said
10 wavelength-filter,

wherein said first light-receiver has a first edge, and said second
light-receiver has a second edge located in the vicinity of said first edge, and

said first edge has a first linear portion and said second edge has a second
linear portion extending in parallel with said first linear portion.

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2. The unit as set forth in claim 1, wherein each of said first and second
light-receivers is a part of a photodetector mounted on a substrate, said first
light-receiver having a first light-receiving surface coextensive in a plane
perpendicular to said substrate, said second light-receiver having a second
20 light-receiving surface coextensive in said plane.

3. The unit as set forth in claim 2, wherein said first and second linear
portions extend in parallel with said substrate.

25 4. The unit as set forth in claim 2, wherein said first and second linear
portions extend perpendicularly to said substrate.

5. The unit as set forth in claim 1, wherein each of said first and second
light-receivers is a part of a photodetector, and said photodetector includes said

first and second light-receivers by one or more.

6. A unit for stabilizing a wavelength of a light, comprising:

- (a) a device collimating laser beams irradiated from a semiconductor laser,
5 into parallel beams;
- (b) a first light-receiver directly receiving a part of said parallel beams;
- (c) a wavelength-filter directly receiving a part of said parallel beams, and
having a transmittance varying in accordance with a wavelength of the received
laser beams; and
- 10 (d) a second light-receiver receiving said parallel beams having passed
through said wavelength-filter,
wherein said first light-receiver has a first edge, and said second
light-receiver has a second edge located in the vicinity of said first edge, and
said first edge has a first linear portion and said second edge has a second
15 linear portion extending in parallel with said first linear portion.

7. The unit as set forth in claim 6, wherein said device is comprised of a lens.

20 8. The unit as set forth in claim 6, wherein said parallel beams have a ± 2
degrees of parallelization or smaller.

9. The unit as set forth in claim 6, wherein each of said first and second
light-receivers is a part of a photodetector mounted on a substrate, said first
25 light-receiver having a first light-receiving surface coextensive in a plane
perpendicular to said substrate, said second light-receiver having a second
light-receiving surface coextensive in said plane.

10. The unit as set forth in claim 9, wherein said first and second linear

portions extend in parallel with said substrate.

11. The unit as set forth in claim 9, wherein said first and second linear portions extend perpendicularly to said substrate.

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12. The unit as set forth in claim 6, wherein each of said first and second light-receivers is a part of a photodetector, and said photodetector includes said first and second light-receivers by one or more.

10 13. A module for stabilizing a wavelength of an optical signal in optical communication, comprising:

(a) a semiconductor laser forwardly irradiating signal laser beams;

(b) a temperature controller which controls a temperature of said semiconductor laser; and

15 (c) a unit which receives laser beams which said semiconductor laser backwardly irradiates, and stabilizes a wavelength of the received laser beams, wherein said unit is comprised of:

(c1) a first light-receiver directly receiving a part of laser beams irradiated from a semiconductor laser;

20 (c2) a wavelength-filter directly receiving a part of said laser beams, and having a transmittance varying in accordance with a wavelength of the received laser beams; and

(c3) a second light-receiver receiving laser beams having passed through said wavelength-filter,

25 wherein said first light-receiver has a first edge, and said second light-receiver has a second edge located in the vicinity of said first edge, and

said first edge has a first linear portion and said second edge has a second linear portion extending in parallel with said first linear portion.

14. The module as set forth in claim 13, wherein said semiconductor laser is integrated to a device together with a field-absorption type semiconductor optical modulator.

5 15. The module as set forth in claim 13, further including a second temperature controller which controls a temperature of said unit independently of a temperature of said semiconductor laser.

10 16. The module as set forth in claim 15, further including a first substrate on which on which said semiconductor laser and said temperature controller are mounted, and a second substrate on which said unit and said second temperature controller are mounted.

15 17. The module as set forth in claim 13, wherein said unit further includes a device collimating said laser beams irradiated from said semiconductor laser, into parallel beams, wherein said first light-receiver directly receives a part of said parallel beams, and said wavelength-filter directly receives a part of said parallel beams.

20 18. The module as set forth in claim 17, wherein said device is comprised of a lens.

19. The module as set forth in claim 17, wherein said parallel beams have a ± 2 degrees of parallelization or smaller.

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20. The module as set forth in claim 13, wherein each of said first and second light-receivers is a part of a photodetector mounted on a substrate, said first light-receiver having a first light-receiving surface coextensive in a plane perpendicular to said substrate, said second light-receiver having a second

light-receiving surface coextensive in said plane.

21. The module as set forth in claim 20, wherein said first and second linear portions extend in parallel with said substrate.

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22. The module as set forth in claim 20, wherein said first and second linear portions extend perpendicularly to said substrate.

23. The unit as set forth in claim 13, wherein each of said first and second
10 light-receivers is a part of a photodetector, and said photodetector includes said first and second light-receivers by one or more.

24. A module for stabilizing a wavelength of an optical signal in optical communication, comprising:

15 (a) a semiconductor laser irradiating signal laser beams;

(b) a temperature controller which controls a temperature of said semiconductor laser;

(c) a beam splitter which splits said signal laser beams, and

(d) a unit which receives a part of said signal laser beams having been split
20 by said beam splitter, and stabilizes a wavelength of the received signal laser beams,

wherein said unit is comprised:

(c1) a first light-receiver directly receiving a part of laser beams irradiated from a semiconductor laser;

25 (c2) a wavelength-filter directly receiving a part of said laser beams, and having a transmittance varying in accordance with a wavelength of the received laser beams; and

(c3) a second light-receiver receiving laser beams having passed through said wavelength-filter,

wherein said first light-receiver has a first edge, and said second light-receiver has a second edge located in the vicinity of said first edge, and

said first edge has a first linear portion and said second edge has a second linear portion extending in parallel with said first linear portion.

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25. The module as set forth in claim 24, wherein said semiconductor laser is integrated to a device together with a field-absorption type semiconductor optical modulator.

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26. The module as set forth in claim 24, further including a second temperature controller which controls a temperature of said unit independently of a temperature of said semiconductor laser.

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27. The module as set forth in claim 26, further including a first substrate on which on which said semiconductor laser and said temperature controller are mounted, and a second substrate on which said unit and said second temperature controller are mounted.

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28. The module as set forth in claim 24, wherein said unit further includes a device collimating said laser beams irradiated from said semiconductor laser, into parallel beams, wherein said first light-receiver directly receives a part of said parallel beams, and said wavelength-filter directly receives a part of said parallel beams.

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29. The module as set forth in claim 28, wherein said device is comprised of a lens.

30. The module as set forth in claim 28, wherein said parallel beams have a ± 2 degrees of parallelization or smaller.

31. The module as set forth in claim 24, wherein each of said first and second light-receivers is a part of a photodetector mounted on a substrate, said first light-receiver having a first light-receiving surface coextensive in a plane perpendicular to said substrate, said second light-receiver having a second light-receiving surface coextensive in said plane.

32. The module as set forth in claim 31, wherein said first and second linear portions extend in parallel with said substrate.

33. The module as set forth in claim 31, wherein said first and second linear portions extend perpendicularly to said substrate.

34. The unit as set forth in claim 24, wherein each of said first and second light-receivers is a part of a photodetector, and said photodetector includes said first and second light-receivers by one or more.